

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Original) A method for cleaning a vessel contaminated with a sludge comprising the steps of:
 - i) generating a vacuum in a conduit;
 - ii) contacting said sludge with said conduit;
 - iii) extracting said sludge via said conduit; and
 - iv) collecting the sludge.
2. (Original) A method as claimed in claim 1, wherein the vacuum is generated pneumatically.
3. (Original) A method as claimed in claim 2, wherein the vacuum is generated by a pump.
4. (Previously Presented) A method as claimed in claim 1, comprising the step of contacting the sludge with a solvent.
5. (Original) A method as claimed in claim 4, wherein the solvent comprises a citrus oil extract.

6. (Original) A method as claimed in claim 5, wherein the solvent is orange oil.

7. (Previously Presented) A method as claimed in claim 1, wherein the sludge is heated to a temperature in the range of 40 - 90°C.

8. (Original) A method as claimed in claim 7, wherein the sludge is heated to a temperature in the range of 65 - 75°C.

9. (Previously Presented) A method as claimed in claim 1, wherein the sludge comprises one or more of the group comprising asphalt, bitumen, crude oil and heavy oil.

10. (Original) An apparatus for cleaning a vessel contaminated with a sludge, comprising means for generating a vacuum, a conduit connected to said means for generating a vacuum adapted to extend into the interior of the vessel from said means for generating a vacuum, and to extract the hydrocarbon and means for collecting the extracted hydrocarbon.

11. (Original) An apparatus as claimed in claim 10, wherein the vacuum is generated pneumatically.

12. (Previously Presented) An apparatus as claimed in claim 10, further comprising means for heating the hydrocarbon before and/or during extraction.

13. (Original) An apparatus as claimed in claim 12, wherein the means for heating the hydrocarbon comprises a microwave emitter or heated oil.

14. (Previously Presented) An apparatus as claimed in claim 12, wherein said means for heating the hydrocarbon is disposed adjacent to an opening in the conduit.

15. An apparatus as claimed in claim 10, wherein the apparatus is portable.

16. (Canceled)

17. (Original) A method for extracting hydrocarbons from waste material comprising the steps of:

- i) identifying waste material with an economically valuable or environmentally hazardous concentration of hydrocarbons;
- ii) treating the waste material to render the hydrocarbons more susceptible to extraction;
- iii) extracting the hydrocarbons from the waste material;
- iv) optionally further processing the extracted hydrocarbons into a usable product.

18. (Original) A method as claimed in claim 17, wherein the hydrocarbons in the waste material comprise more than 20% hydrocarbon oil by volume.

19. (Previously Presented) A method as claimed in claim 17, wherein the treatment of the waste material to render the hydrocarbons more susceptible to extraction comprises the use of heat and/or solvents.

20. (Previously Presented) A method as claimed in claim 17, wherein the extracted hydrocarbons are mixed with bitumen.

21. (Previously Presented) A method as claimed in claim 17, wherein the hydrocarbons are heated to a temperature of 40 - 90°C.

22. (Original) A method as claimed in claim 21, wherein the hydrocarbons are heated to a temperature of 65 - 95°C.

23. (Previously Presented) A method as claimed in claim 17, wherein the average percentage of hydrocarbons by volume in the waste material is at least 50%.

24. (Previously Presented) A method as claimed in claim 17, wherein the hydrocarbon is heated to a depth of between 20 - 60cm from the upper surface of the sludge.

25. (Original) A method as claimed in claim 24, wherein the hydrocarbon is heated to a depth of between 40 - 45cm.

26. (Previously Presented) A method as claimed in claim 17, wherein the waste material comprises one or more from the group comprising asphalt, bitumen, heavy fuel oil, crude oil, animal fats and vegetable oil.

27. (Original) A method for extracting hydrocarbons from solid waste material comprising the steps of:

- i) mixing the solid waste material with a solvent;
- ii) extracting the majority of the hydrocarbons from the mixture;
- iii) heating the remaining waste hydrocarbons in the mixture to a temperature of at least 40°C;
- iv) extracting the remaining waste hydrocarbons;
- v) optionally further processing the extracted hydrocarbons into a usable product.

28. (Original) A method for extracting hydrocarbons from sludge comprising the steps of:

- i) heating the waste hydrocarbons to a temperature of at least 40°C;
- ii) extracting the majority of the hydrocarbons
- iii) mixing the remaining waste hydrocarbons with a solvent;
- iv) extracting the remaining waste hydrocarbons;
- v) optionally further processing the extracted hydrocarbons into a usable product.

29. (Original) A method for extracting hydrocarbons from sludge comprising the steps of:

- i) identifying sludge comprising more than 20% hydrocarbons by volume;
- ii) heating said waste hydrocarbons to a temperature of at least 40°C;
- iii) extracting said heated waste hydrocarbons;
- iv) optionally further processing the extracted hydrocarbons into a usable product.

30. (Original) An apparatus for extracting recyclable hydrocarbons from waste hydrocarbons contaminated with aggregate comprising:
means for heating said hydrocarbons to a temperature of at least 40°C and
means for extracting and/or transferring said heated waste hydrocarbon to a storage
means.

31. (Original) An apparatus as claimed in claim 30, wherein the means for heating comprises a coil or a bank of tubes having a circulating liquid of thermal oil/vapour/gas or electric elements.

32. (Original) An apparatus as claimed in claim 15, wherein the means for heating comprises oil filled tubes.

33. (Original) A method for extracting hydrocarbons from solid waste material comprising the steps of:

i) mixing the solid waste material with a solvent;
ii) extracting the hydrocarbons from the mixture;
iii) optionally further processing the extracted hydrocarbons into a usable product.

34. (Original) A method as claimed in claim 33, wherein the solid waste material comprises bitumen, asphalt and compacted oily sand.

35. (Previously Presented) A method as claimed in claim 33, wherein the solvent comprises one or more selected from the group comprising aqueous solvent, non-aqueous solvent and water.

36. (Original) A method as claimed in claim 35, wherein the solvent is an orange oil derivative, aliphatic hydrocarbon, aromatic hydrocarbon or a chlorinated solvent.

37. (Original) An apparatus for filtering air said apparatus comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

38. (Original) An apparatus as claimed in claim 37, wherein the means for generating a vortex comprises at least one conical plate.

39. (Original) An apparatus as claimed in claim 38, wherein the at least one conical plate comprises a drainage channel.

40. (Previously Presented) An apparatus as claimed in claim 38, wherein the at least one conical plate is perforated, solid or slatted.

41. (Previously Presented) An apparatus as claimed in claim 37, comprising means for externally spraying the plurality of chambers with cooling fluid.

42. (Original) An apparatus as claimed in claim 41, wherein the means for externally spraying the chambers comprise spray nozzles.

43. (Previously Presented) An apparatus as claimed in claim 41 wherein the cooling fluid comprises water, hydrocarbon solvent or liquefied gas.

44. (Previously Presented) An apparatus as claimed in claim 37, wherein the number of chambers in the apparatus is in the range of 5 to 15.

45. (Original) An apparatus as claimed in claim 44 wherein the number of chambers is in the range of 7 to 9.

46. (Previously Presented) An apparatus as claimed in claim 41 wherein the first chamber is not cooled with external cooling fluid.

47. (Previously Presented) An apparatus as claimed in claim 37, wherein the height to diameter ratio of the chamber is in the range of 4:1 to 6:1.

48. (Original) An apparatus as claimed in claim 47, wherein the height to diameter ratio of the chamber is 5:1.

49. (Previously Presented) An apparatus as claimed in claim 37 wherein the means for generating a vortex is dispersed with each chamber at the same height from the bottom of the chamber or linearly staggered.

50. (Previously Presented) An apparatus as claimed in claim 37 wherein each chamber comprises an inlet and an outlet.

51. (Original) An apparatus as claimed in claim 50, wherein the means for generating a vortex is disposed in the range 5 to 35cm below the inlet pipe.

52. (Previously Presented) An apparatus as claimed in claim 50 wherein the outlet pipe is disposed above the inlet pipe.

53. (Previously Presented) An air conditioning system comprising an apparatus as claimed in claim 37.

54. (Original) An apparatus for filtering gas comprising one or more contaminants, said apparatus comprising a plurality of chambers which communicate

with one another in series, such that gas can pass from one chamber to another, at least one of the chambers comprising an inlet port, an outlet port, an internal baffle and a receiving region below the baffle for receiving contaminants, wherein said outlet port is disposed above said baffle such that gas can pass from one chamber to another whilst contaminants are retained in the receiving region of the chamber.

55. (Original) An apparatus as claimed in claim 54 wherein the baffle is shaped to generate a vortex.

56. (Original) An apparatus as claimed in claim 55, wherein the baffle is conical in shape.

57. (Previously Presented) An apparatus as claimed in claim 54, wherein the contaminants are solids and/or liquids.

58. (Previously Presented) An apparatus as claimed in claim 54, wherein the contaminants contain one or more hydrocarbons.

59. (Previously Presented) A method of filtering air comprising the use of an apparatus as claimed in claim 37.

60. (Currently Amended) A method of extraction as claimed in claim 17 comprising between steps [[I]] i) and ii) a method as claimed in claim 1 for cleaning a vessel contaminated with a sludge comprising:

- i) generating a vacuum in a conduit;
- ii) contacting said sludge with said conduit;
- iii) extracting said sludge via said conduit; and
- iv) collecting the sludge.

61. (Currently Amended) A method of extraction as claimed in claim 1 subsequently comprising ~~the method of claim 27~~ a method for extracting hydrocarbons from solid waste material comprising:

- i) mixing the solid waste material with a solvent;
- ii) extracting the majority of the hydrocarbons from the mixture;
- iii) heating the remaining waste hydrocarbons in the mixture to a temperature of at least 40°C;
- iv) extracting the remaining waste hydrocarbons;
- v) optionally further processing the extracted hydrocarbons into a usable product.

62. (Currently Amended) A method of extraction as claimed in claim 28 wherein steps ~~[[I]]~~ i) and/or ii) comprise ~~the method of claim 1~~ a method for cleaning a vessel contaminated with a sludge comprising:

- i) generating a vacuum in a conduit;
- ii) contacting said sludge with said conduit;
- iii) extracting said sludge via said conduit; and
- iv) collecting the sludge.

63. (Currently Amended) A method of extraction as claimed in claim 29 wherein steps ii) and/or iii) comprise ~~the method of claim 1~~ a method for cleaning a vessel contaminated with a sludge comprising:

- i) generating a vacuum in a conduit;
- ii) contacting said sludge with said conduit;
- iii) extracting said sludge via said conduit; and
- iv) collecting the sludge.

64. (Currently Amended) A method of extraction as claimed in claim 1 subsequently comprising ~~the method as claimed in claim 33~~ a method for extracting hydrocarbons from solid waste material comprising:

- i) mixing the solid waste material with a solvent;
- ii) extracting the hydrocarbons from the mixture;
- iii) optionally further processing the extracted hydrocarbons into a usable product.

65. (Currently Amended) A method of extraction as claimed in claim 17 subsequently comprising ~~the method of claim 59~~ a method of filtering air comprising the use of an apparatus for filtering air, said apparatus comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

66. (Currently Amended) A method of extraction as claimed in claim 27 subsequently comprising ~~the method of claim 59~~ a method of filtering air comprising the use of an apparatus for filtering air, said apparatus comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

67. (Currently Amended) A method of extraction as claimed in claim 28 subsequently comprising ~~the method of claim 59~~ a method of filtering air comprising the use of an apparatus for filtering air, said apparatus comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

68. (Currently Amended) A method of extraction as claimed in claim 29 subsequently comprising ~~the method of claim 59~~ a method of filtering air comprising the use of an apparatus for filtering air, said apparatus comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

69. (Currently Amended) A method of extraction in claim 33 subsequently comprising ~~the method of claim 59~~ a method of filtering air comprising the use of an apparatus for filtering air, said apparatus comprising a plurality of chambers which

communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

70. (Currently Amended) A method of extraction as claimed in claim 60 further comprising ~~the method of claim 59 a method of filtering air comprising the use of an apparatus for filtering air, said apparatus comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.~~

71. (Canceled)

72. (Canceled)

73. (Canceled)

74. (Canceled)

75. (Currently Amended) An extraction system comprising apparatus as claimed in claim 10 further comprising an apparatus ~~as claimed in claim 30 for extracting recyclable hydrocarbons from waste hydrocarbons contaminated with aggregate, comprising means for heating said hydrocarbons to a temperature of at least 40°C and means for extracting and/or transferring said heated waste hydrocarbon to a storage means.~~

76. (Currently Amended) An extraction system comprising apparatus as claimed in claim 30 further comprising an apparatus as claimed in claim 37 for filtering air, comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

77. (Currently Amended) An extraction system comprising apparatus as claimed in claim 10 further comprising an apparatus as claimed in claim 30 and/or for extracting recyclable hydrocarbons from waste hydrocarbons contaminated with aggregate, comprising means for heating said hydrocarbons to a temperature of at least 40°C and means for extracting and/or transferring said heated waste hydrocarbon to a storage means, or an apparatus as claimed in claim 37 for filtering air, comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.

78. (Currently Amended) A method as claimed in claim 1 further comprising the method of claim 59 use of an apparatus for filtering air, said apparatus comprising a plurality of chambers which communicate with one another in series, such that air can pass from one chamber to another, each of which comprises means for generating a vortex.